United States Patent

Walls

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[54] LIGHTWEIGHT ROLL CONSTRUCTION

[72] Inventor: **Harold D. Walls**, White Twsp. Cty. of Ind., Pa.

[73] Assignee: **McCreary Industrial Products Co.**, Indiana, Pa.

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[52] **U.S. Cl.** **29/130**, 29/132

[51] **Int. Cl.** **B21b 31/08**

[58] **Field of Search** 29/132, 130, 116, 110

[56] **References Cited**

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Primary Examiner—Alfred R. Guest

Attorney—Buell, Blenko & Ziesenheim

[57] **ABSTRACT**

The specification discloses a lightweight construction for rolls of the composite type employed in corrosive environments and other environments in which minimal weight or low inertia is a favorable factor. Various constructions are disclosed comprising a central core or shaft of fiber glass reinforced plastic or of steel having a protective coating or layer of fiber glass reinforced plastic, and a body of syntactic foam molded into a cylindrical form coaxial to the shaft and bonded thereto. A layer of fiber glass reinforced plastic surrounds the outer cylindrical surface of the body of foam and protects the annular ends of the roll. An outer abrasion protecting layer of elastomer material is bonded or otherwise secured to the outer cylindrical surface of the fiber glass plastic layer. The syntactic foam comprises nodules or spheres of glass, epoxy or phenolic material suspended in a matrix of thermosetting resin, in various degrees of density. One arrangement employs a matrix consisting of thermosetting resin and microspheres of glass, epoxy, phenolic or other material. Another arrangement employs a matrix of thermosetting resin with other reinforcing agents such as fibers of glass, boron, graphite, steel or asbestos. A further variation employs a matrix in which a blowing agent, such as azodicarbonomide is introduced into a thermosetting resin with an activator such as oxalic or acetic acid.

10 Claims, 8 Drawing Figures